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State of Montana

Biennial Report for

Information Technology

2007

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This is the third Biennial Information Technology Report prepared under the authority of the Montana Information Technology Act of 2001.

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Foreword

The Montana Information Technology Act (MITA) requires that the Department of Administration (DOA) prepare a report each biennium that assesses the state's progress in achieving the goals and initiatives outlined in the state's Information Technology Strategic Plan. MITA also requires that the report contain an analysis of the state's information technology (IT) infrastructure including its value, condition, capacity; an inventory of IT equipment, software and services; and an evaluation of IT performance. This document is the third biennial IT report and measures our progress against the state's second IT strategic plan which was developed in the spring of 2004.

The focus of the Biennial Report is the executive branch. The legislative branch, judicial branch, and university system are generally excluded since MITA was not designed to cover those organizations.

The background material for this report originated from several primary sources:

- Expenditure and budget data from the Office of Budget and Program Services and the System Audit Statewide Accounting, Budgeting and Human Resource System (SABHRS).
- Agency IT plans.
- Project data assembled by the Information Technology Service Division's (ITSD) Project Management Office.
- ITSD web survey application. Agency staff used this application to log information on their servers, applications, and progress against their strategic plans.

The Biennial Report is a summary of dozens of detailed reports, spreadsheets, analysis documents, SABHRS queries, and independent research. The detailed material can be found in the appendices, but the appendices are not published in hardcopy due to their length. Appendices are available in hardcopy by request and through the web at:
http://itsd.mt.gov/techmt/biennialreport.asp

If you have any questions regarding the data reported here, or the use of information technology within the State of Montana, please contact the Information Technology Services Division of the Department of Administration.

Table of Contents

Foreword i

Progress on the State Strategic Plan for Information Technology 2004 1

Progress on Agency Information Technology Plans 3

MITA Audit and Response 4

Status of the Information Technology Infrastructure 5

- Data Centers 5
- Servers 6
- Applications 8
- Desktop Computers 10
- Mainframe Computing Environment 12
- Mid-Tier Computing Environment 12
- Telecommunications Network Infrastructure 12
- ITSD Data Storage Environment 16
- IT Staffing 16

IT Expenditures 17

Major Information Technology Projects 18

Other IT Issues 20

Appendices 24

Progress on the State Strategic Plan for Information Technology 2004

ITSD adopted the use of Enterprise Risk Management (ERM) and Control Objectives for Information and Related Technologies (COBIT) to formalize risk management and provide control objectives for IT. This is one use of deploying ***Enterprise Architecture*** (EA) as a tool for managing change in an organization. In 2006 the CIO implemented the state of Montana Information Technology Resource Planning and Development Cycle. The purpose was to define a coordinated and integrated approach to manage the development of information technology resources needed to support the strategic missions of the state of Montana.

There has been significant growth in the use of ***e-government*** applications over the last two years. With 14,252 registered users; transactions were up from 1,788,768 in FY05 to 1,998,093 in FY06, representing an increase of 11.7 percent. We expect to see continued growth in this area since 57.1 percent of Montana households have computers and 62.8 percent of all Montanans use the Internet.

We continue to make progress on the ***Implementation of Best Practices***. There has been increased utilization of qualified project managers and the use of independent verification and validation processes on major projects. Major IT projects are aligned with the agencies' IT Plans which are aligned to the state's IT Strategic Plan. All major projects are reviewed as part of the IT Strategic Plan approval process and the Executive Planning Process review. The Policy and Planning Services Bureau has established a project management office and maintains an ongoing inventory of the state's IT infrastructure.

The IT Policy Process was developed as the primary policy and standard development process, and provides for the development, review, publishing, and implementation of statewide and ITSD IT policies, standards and supporting processes. These processes will also provide for the development and implementation of procedures, guidelines, and white papers. This will improve the ***business process management*** within ITSD. Since the project's inception, several policies, standards and procedures have been developed and work is in progress to address enterprise IT planning, project management and procurement via policy.

Workforce development continues to be a challenge within the IT arena. As a whole, the state of Montana is below industry standards on the number of IT staff as a ratio to total employees supported by IT. Additionally, many key IT positions remain unfilled due to hiring difficulties directly related to the prevailing wage the state pays for IT professionals. As a result of the low wages relevant to the prevailing market rate, the agencies are often left with a small pool of less qualified applicants. This severity of this situation is expected to increase as the aging state employee population moves to retirement.

Public Safety Communications continues to expand and improve within the state of Montana. Montana has 57 Public Safety Answering Points (PSAP's), all of which provide basic 9-1-1 service. Wire and wireless **Enhanced 9-1-1 (E9-1-1***)* service enables law enforcement and public safety agencies to respond quicker by providing the dispatcher with critical location information for a caller on a wireless phone. There are 28 PSAP's that provide E9-1-1 service and 20 more that have agreed to provide E 9-1-I services. Primary E9-1-I service is provided by Century Tel. A few large PSAP's at urban centers also use Qwest. The statewide E9-1-1 service allows Public Safety Answering Points (PSAP's) to acquire the hardware and DBMS/ALI database functionality as a service and pay for these services on a recurring monthly basis versus purchasing and maintaining the system themselves.

The concept of a connected and compatible statewide ***Public Safety Land Mobile Radio System*** (LMR) in Montana has been discussed and studied for over 20 years. Local public safety systems were built on a local needs basis, often with no coordination with other response groups in regional areas. Following the events of 9-11, there was an intense focus on homeland security and the inability of agencies to communicate effectively with each other during an emergency. In 2004 Lewis and Clark County initiated a project to upgrade their voice radio system to a combined trunked/conventional P25 Motorola system. The statewide Interoperability Executive Council (SIEC) adopted Project 25 digital standard as the underlying technology architecture to ensure interoperable communication. All state of Montana agencies using digital voice communications are required to conform to the P25 standard. The Disaster and Emergency Services (DES) division, the administrator for Homeland Security funding, now require the P25 standard for state and local purchases.

The Northern Tier Interoperability Consortium (NTIC) was born from law enforcement concerns regarding the lack of communication interoperability along the Canadian Border. The NTIC was organized in 2004, involving 12 counties and 4 tribal nations. In 2005, the NTIC voted to follow the Lewis and Clark Model for their system. DES provided approximately $7.5 million of homeland security funding to initiate the project and the 2005 Montana Legislature allocated $3.5 million to the NTIC project.

ITSD, DES, and eight consortia have proposed expansion of the Lewis and Clark County design to a statewide approach by forming the Interoperability Montana Project (IM.) The Interoperability Montana Project has identified the expansion of the trunked radio system and digital microwave system as an expansion of the Lewis and Clark and the Northern Tier Projects. The phase one expansion will involve the improvement and development of up to seventeen sites in 2007, with additional sites to be added depending on funding. Several state agencies, including the Montana Highway Patrol and Department of Livestock, plan to utilize the Interoperability Montana system immediately. A number of other state agencies are examining the extent they will support and utilize the IM system as it deploys.

Progress on Agency Information Technology Plans

Each state agency developed a specific agency IT plan in the spring of 2004 for the subsequent six years, focusing on the next biennium. All 31 agencies in the executive branch submitted plans. Each of these agency plans contained detailed goals and supporting objectives for IT as well as descriptions of any significant IT initiatives the agency was undertaking. In all, they proposed 161 separate goals, supported by 510 specific objectives. Agencies were asked to report their progress in meeting these objectives on the following scale: *Completed, Currently ongoing as planned, Currently ongoing but behind schedule* and *Not started.* Agencies reported that more than 75 percent of all objectives have either been accomplished or are on schedule. The remaining objectives are equally divided between those simply below expectations and those that for various reasons were not started at all (often due to lack of funds, change in agency focus, or federal changes).

Agencies were also asked to report on how well they are doing on major IT initiatives (typically spends in excess of $300,000 or more than 25 percent of their IT budget.) There were 94 such initiatives planned in 2004. Of these nearly 80 percent are completed or on schedule. Only 6 percent are below expectations and 15 percent were never started.

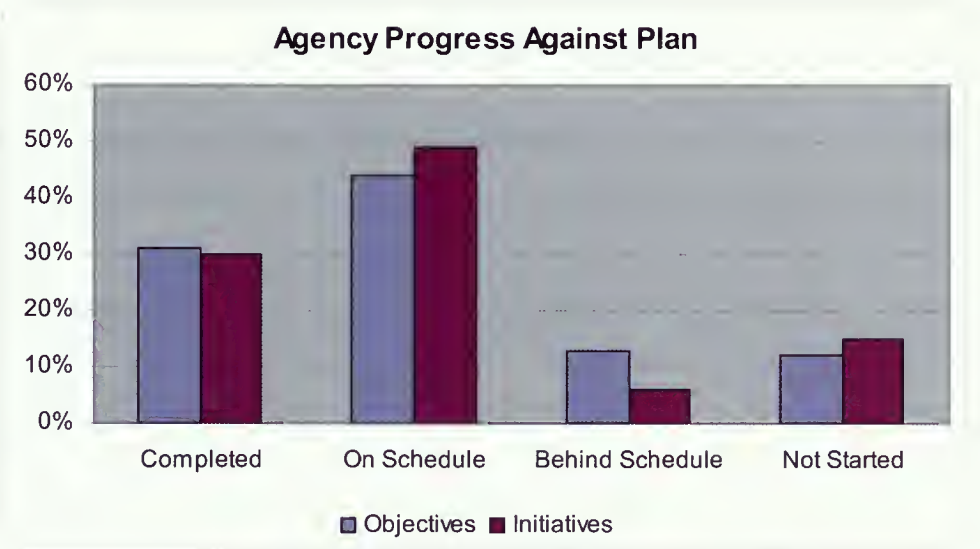

Figure 1 illustrates progress agencies made against their IT Plans.

MITA Audit and Response

In October 2005 the Enterprise IT Management Audit Report (LAD #05DP-06) was published with four findings relative to DOA's implementation of the Montana Information Technology Act (MITA). The report required DOA to do the following:

1. Commit to and execute the centralized management and control of IT required by MITA.

2. Develop and document implementation plans addressing each section of MITA.

3. A. Establish and document the process of using policies to ensure DOA and state agencies comply with MITA.
   B. Establish and document procedures to maintain enterprise IT policies and standards.

4. Coordinate with the Office of Budget and Program Planning to enforce the statutory requirement that new IT investments be included in the governor's budget only if the project is included in the approved agency information technology plan.

The CIO Policy Project and dedicated policy team was established in response to the audit findings 2 and 3. The project advances this goal through the development and implementation of statewide IT policies and standards.

The IT Policy Process was developed as the primary policy and standard development process, and provides for the development, review, publishing, and implementation of statewide and ITSD IT policies. Standards and supporting processes will provide for the development and implementation of procedures, guidelines and white papers.

Key practices in the development of policies and standards is the use of Enterprise Risk Management (ERM) and Control Objectives for Information and Related Technologies (COBIT) to formalize risk management and provide control objectives for IT.

The policy team is currently developing three primary policies on IT procurement, IT planning, and IT project management. Ten documents consisting of policies, standards, and strategy white papers have been published. An additional 11 policies/standards and 5 strategy white papers are also under development.

Finding 4 is being addressed through the Office of Budget and Program Planning and DOA/ITSD coordinated efforts on reviewing and evaluating major IT projects. They issued a joint survey on IT EPP requests in August 2006, and all major IT project requests that DOA/ITSD receives are being distributed to OBPP. This includes all agency proposals for data center expansions. In addition, this Biennial Report contains a section on major IT projects that includes information on all IT projects regardless of their source of funding. DOA/ITSD requires agencies to update their agency IT plans before approving major new IT projects.

The Enterprise IT Management Audit Report (LAD #05DP-06) and DOA response can be found at http://leg.mt.gov/css/audit/audit_reports_year.asp

Status of the Information Technology Infrastructure

The Information Technology Service Division maintains a web based application that allows agencies to input data relative to the current status of their IT inventory. Agencies are required to maintain current information in the database, making entries as changes occur, and performing annual updates as requested by ITSD. The following section of this report reflects an analysis of that data as reported by the agencies.

Data Centers

There are 293 sites housing 934 physical servers, which store and run the state's software applications. Due to their critical nature, data centers are typically designed to have special environmental protections in place. The typical protections include:

- HVAC (heating, ventilation, air-conditioning)
- Fire suppression systems
- Conditioned power source to eliminate voltage drops and peaks
- Battery backup for power during temporary outages
- Local/controlled access
- Generators for alternate power source over extended periods

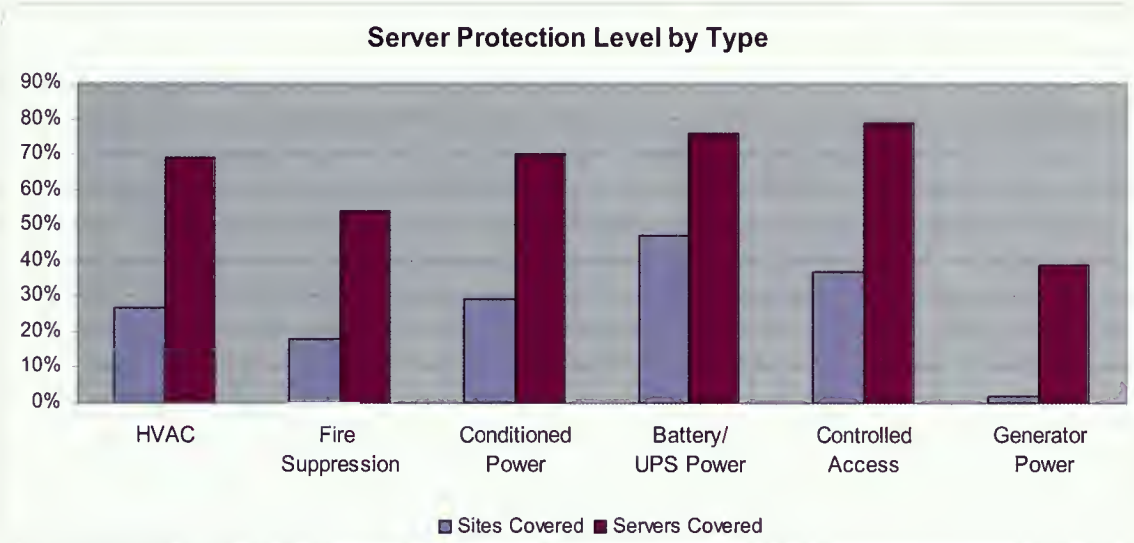

Figure 2 illustrates the percentage of servers and sites covered by the typical protective systems.

There appears to be great disparity among the levels of protection installed for the state's data centers. The larger data centers typically have most of the standard protective systems listed above; however, many of the smaller data centers have few or none of the critical protective systems in place.

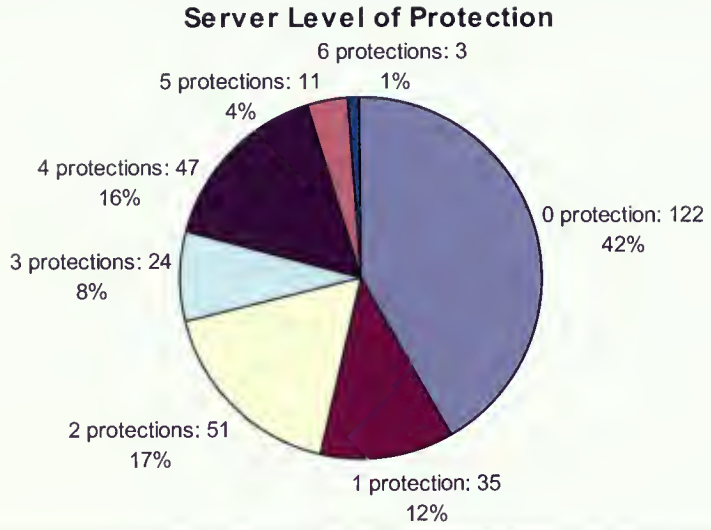

Figure 3 illustrates the level of protection for state servers.

While only three sites *(the ITSD data center in the Mitchell Building, DOJ at Fort Harrison, and MDT)* have all six levels of protection, 295 or 32 percent of the state's servers are located at those three locations. There are 601 or 64 percent of the state's servers located in sites with four or more protections. A total of 157 or 17 percent of servers are in isolated locations that have one or no protection.

Servers

By definition, a server is a multi-user computer that provides a specific type of service to client software running on other computers – usually PCs. For our purpose, the term server refers to a physical or virtual computer on which server software is running. A single server may have many applications running on it; therefore, the server may provide many different services to many different users on the network. Servers in this report include everything from a large mainframe down through mid-tier size servers and include large desktop computers if they are operating as servers.

The state has 934 servers in operation housing more than 1076 physical or virtual servers. With appropriate software, dozens of virtual servers may reside on a single physical server. ITSD, DOJ, and STF use this technique to reduce the number of physical servers, simplify management, and minimize software-licensing cost.

There are 50 servers dedicated to running Storage Area Networks (SANs) for the purpose of backing up and storing large amounts of critical data. There are 10 agencies that are currently employing SANs: COR, DEQ, DLI, FWP, LEG, MDT, MSL, OPI, SOS, and STF.

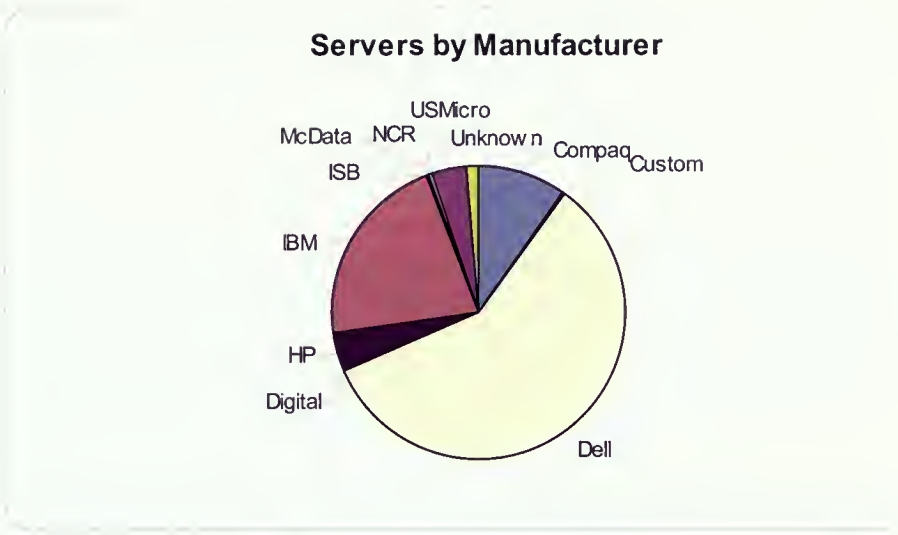

Figure 4 illustrates servers by manufacturer.

Dell and IBM make up the largest portion of the state's servers, about 80 percent. With the merger of Compaq and Hewlett-Packard (HP) almost 14 percent of the state's servers are supported by HP.

Operating Systems

The operating system controls the other application software running on the server. Presently, Windows is the predominant server operating system within the enterprise landscape. There are fourteen separate operating systems currently in use throughout the state. This diversity contributes to the complexity associated with providing support and planning future growth strategies, while maintaining the enterprise infrastructure.

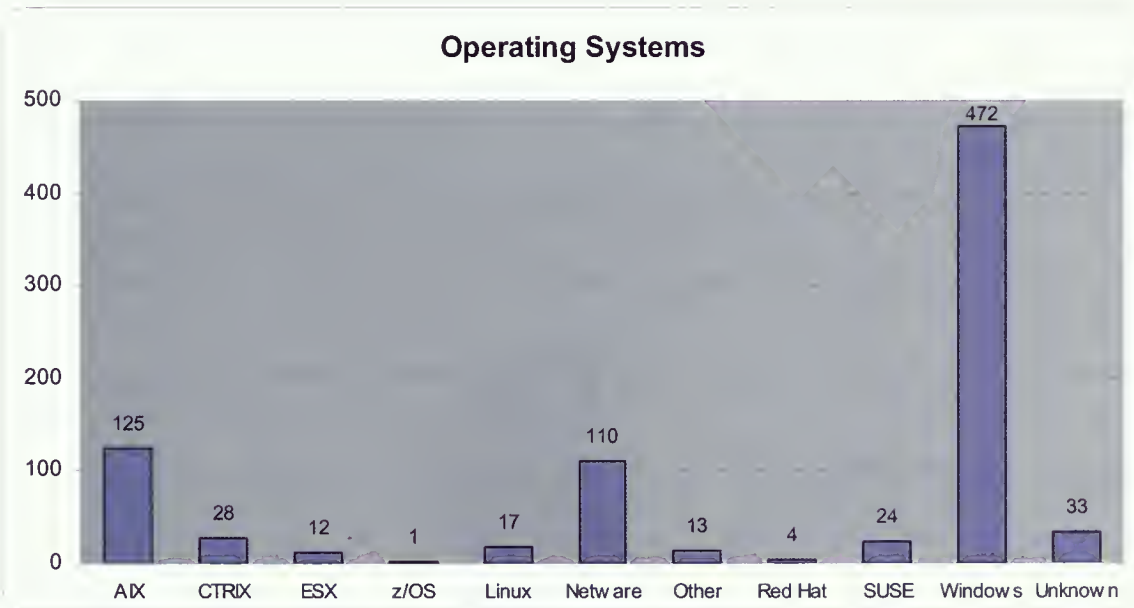

Figure 5 illustrates the server operating system by type.

Age

Of the 934 servers identified within the survey, 79 percent are four years old or newer. Most hardware vendors commit to five years of parts availability for servers; therefore, five years is the reasonable upper limit for the life of a deployed server.

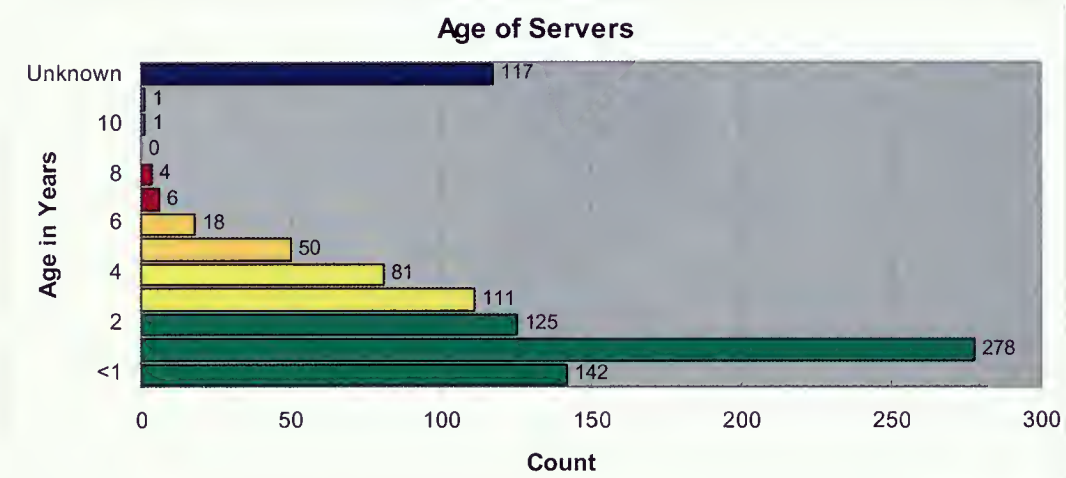

Figure 6 illustrates the age distribution of servers identified within the agency.

Applications

Software applications are used to carry out a wide variety of functions performed by agencies within state government. These functions support internal, state-related business processes as well as external, public-related business transactions. The survey data does not reflect single-user applications.

Our applications are divided into three major categories; **commercially** available and procured, **custom** built, or a **database** (data storage) application. Only 16 percent of the applications used by the state of Montana are commercially available products. Approximately 43 percent are custom built to meet the unique needs of the state, or because a commercial application was not available.

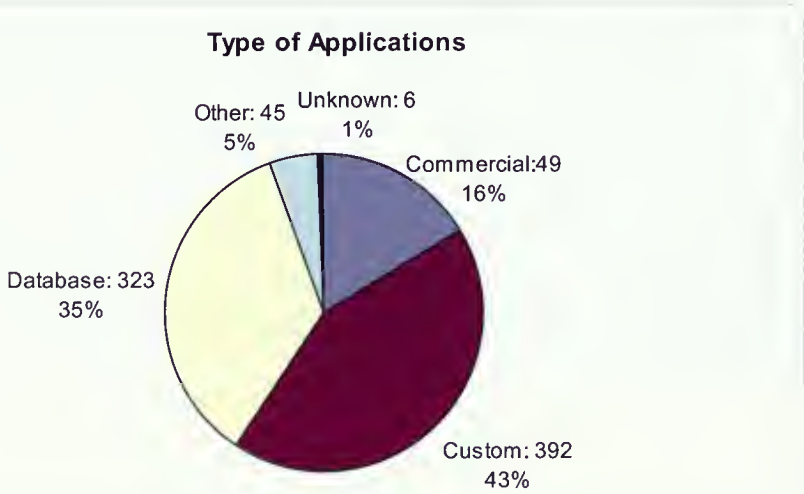

Figure 7 illustrates the breakdown of the state's major applications by type.

Applications were rated by the agencies to determine their relative age, ranging from new to obsolete for current purposes. A total of 107 applications are currently classified as "declining" in age or obsolete, 62 of which are custom applications that will need to be upgraded or replaced in the near to immediate future.

Software lifecycle is predicated on the type of software and hardware platform being used. Any one of the following factors may require the replacement or updating of software: hardware equipment changes, operating system changes, user needs, manufacture updates and termination of support for older versions. At a minimum, operating system software upgrades should be timed to coincide with normal hardware replacement or when application/middleware is undergoing a major upgrade.

Agencies will need to address lifecycle management of their software applications in their agency IT plans.

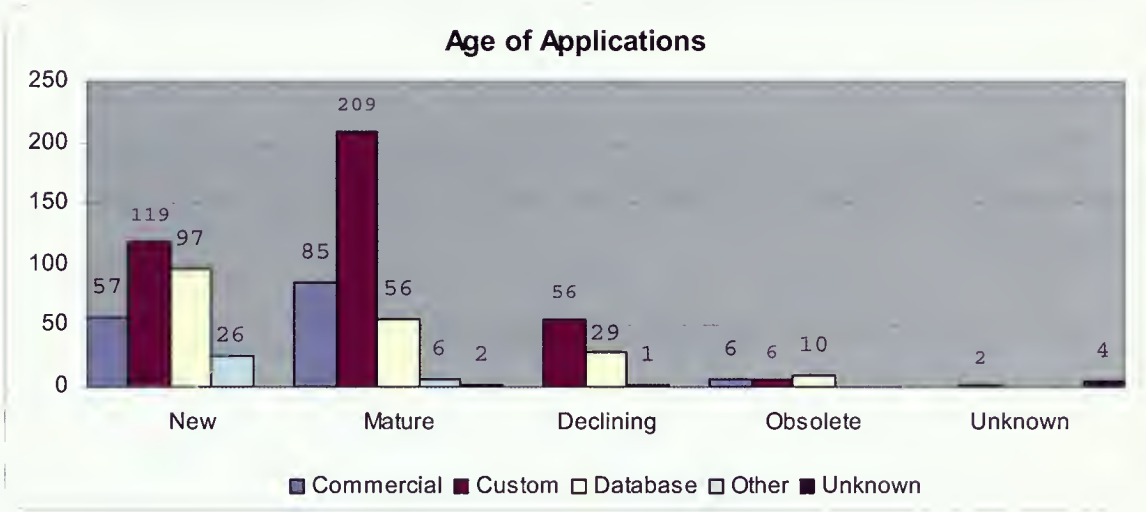

Figure 8 illustrates applications by type and by age.

Applications were also rated for their level of criticality to the continued operation of state businesses. The agencies were asked to indicate whether the application has a disaster recovery plan in place. Nearly 78 percent of all applications do **not** have a disaster recovery plan, 240 of which are highly critical to state operations.

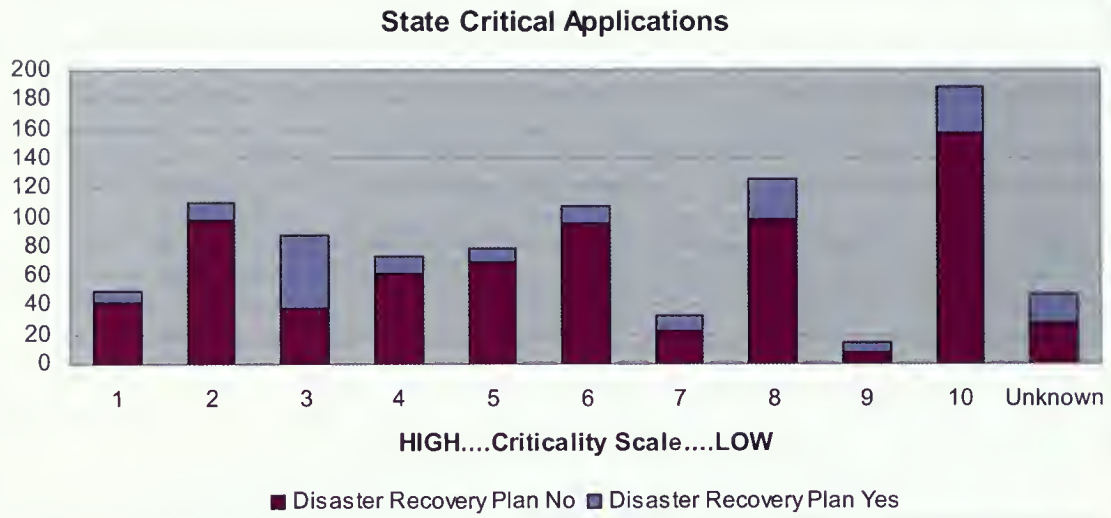

Figure 9 illustrates applications critical to state operations with an indication of the status of their recovery plan.

The applications were also rated for their level of criticality to the continued operation of the agency business. A scale of high, medium, or low was used. Approximately 68 percent of the applications rated as critical to agency operation do **not** have a disaster recovery plan.

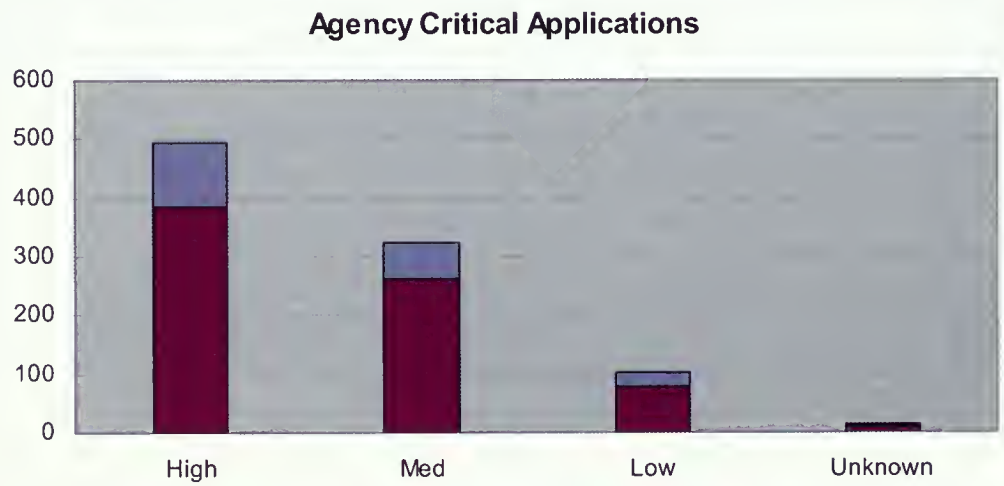

Figure 10 illustrates the agency rating, along with the status of the disaster recover plan.

Desktop Computers

Montana currently has 13,670 personal computers in service, with 2005 or 14.6 percent of those being laptop computers, and the remainder being desktop computers. There has been a 3 percent increase in the number of personal computers from 2004 to 2006. The state's PC-standard is based on IBM and IBM-compatible equipment and selected software. The state has a term contract with IBM, Dell, and HP for PC acquisitions. While there has only been a moderate growth in the number of PCs, the number of laptops is increasing while the overall number of desktop PC's remained level during 2005 and 2006.

The state's policy for PC replacement is once every four years, which is consistent with industry and government practices. The actual PC replacement rate for fiscal year 05 and fiscal year 06 averaged 19 percent for desktop computers and 17.5 percent for laptop computers.

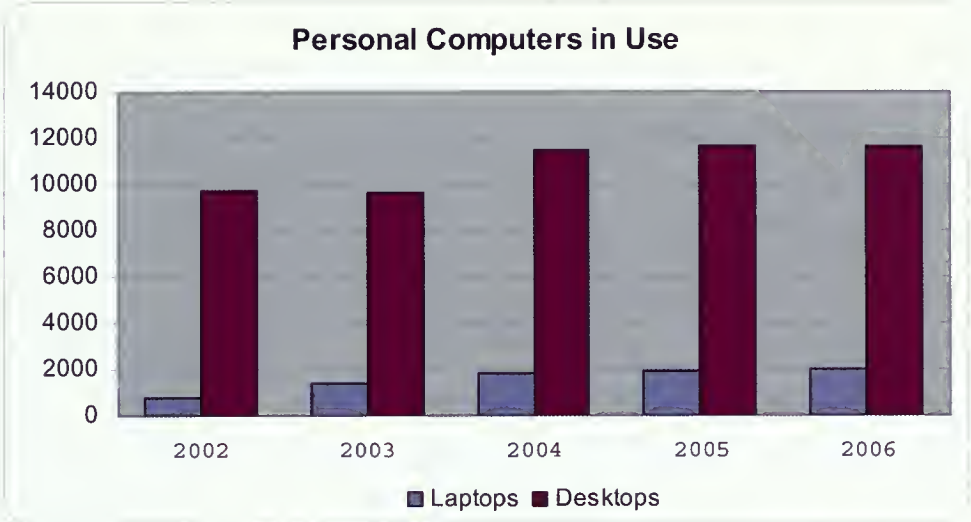

Figure 11 illustrates how the number of personal computers in use by the state has increased over time.

Agencies will need to replace a minimum of 3,229 personal computers within the next biennium in order to maintain the state's policy for PC replacement of once every four years. At an approximate cost of $1,500 per unit, the projected investment will be $4.8 million. Most agencies have not adhered to the 25 percent a year replacement schedule and will therefore require a larger capital expenditure in order to become current with state policy.

Beginning is January 2007, new computers will start shipping with the new Windows Vista operating system and we can expect to see changes in the associated office suites such as Office 2007. The state will be faced with evaluating upgrades and enterprise compatibility issues.

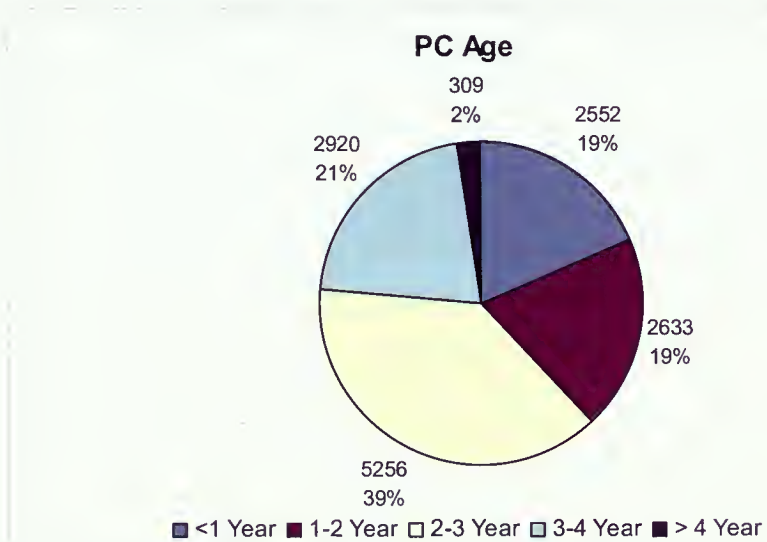

Figure 12 illustrates the distribution of personal computers by age.

Mainframe Computing Environment

The state has operated a centralized mainframe computer for many years. The state currently operates an IBM zSeries 800 Mainframe. In recent years, agencies' demand for mainframe computing services has declined as they have turned to a mid-tier computing environment for application processing and delivery of web eGovernment services. This movement is consistent with nation-wide trends. Currently, nearly 90 percent of the workload on the state's mainframe computer comes from three agencies, and these agencies have plans to migrate their applications to a mid-tier environment within the next 18 to 48 months. After this migration has occurred, the operating costs for the mainframe computer will remain nearly at their current level. The few remaining agency applications will then have the full cost burden of supporting the mainframe computing environment unless a different cost recovery method is implemented. The state must develop a strategy for managing this migration, including a plan to finance the continuing mainframe operations and IT staffing support.

Mid-Tier Computing Environment

Mid-Tier computers are generally much smaller than traditional mainframe computers and larger than "personal computers." These systems rely on the Unix, Windows and Linux operating systems. The vast majority of applications developed in the past ten years have been aimed at the mid-tier platform. Mid-tier has become the predominant platform for database services, application processing, and web services.

Mid-tier computing has grown dramatically as the demand for database services, application processing, and web-services has grown. Similarly, the need for high availability and redundancy has added to mid-tier cost and support staff work load. Smaller agencies have difficulty retaining support staff, and critical practices, such as disaster recovery, often receive less attention than they should. To provide the best value to the state for dollar expended and to provide the best service to agencies and the citizens they serve, centralization and consolidation should be aggressively pursued.

Telecommunications Network Infrastructure

SummitNet II is the integrated voice, data, and video network used by government agencies, University System, libraries, local governments, and K-12 educational institutions. Multiple telecommunications carriers throughout the state provide SummitNet II. High-speed ATM switches located in many of the larger Montana urban areas connect their respective communities and university campus' together. Additionally, VisionNet has deployed ATM switches in additional communities not supported by Qwest via their independent network of telephone service providers.

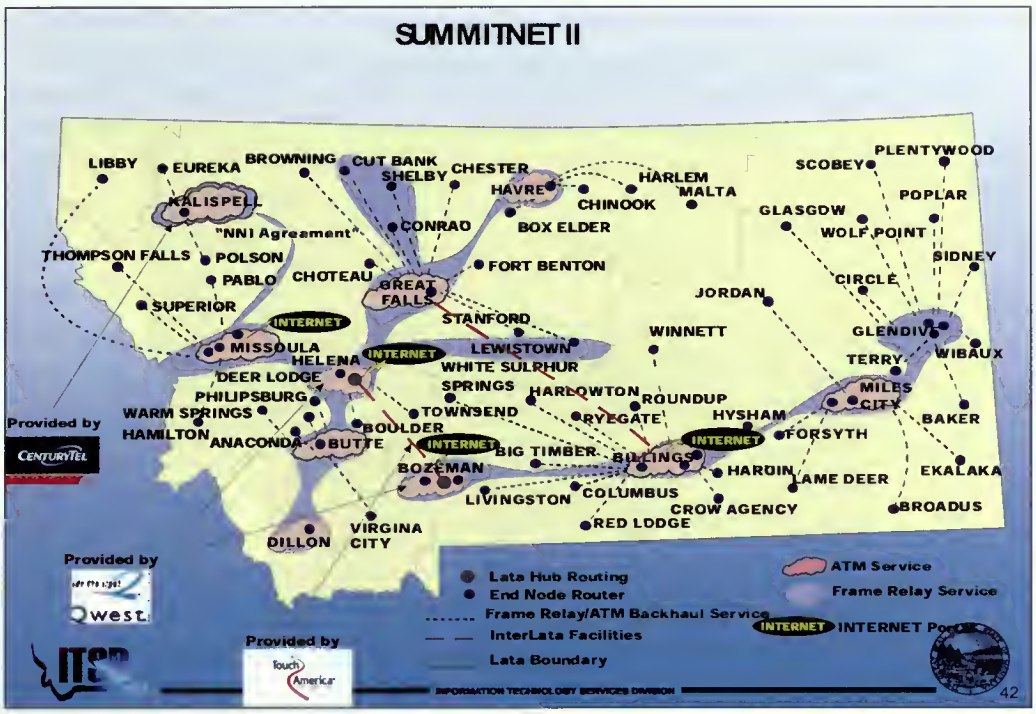

Figure 13 illustrates the Areas Serviced by SummitNet II

There are two high-speed connections between the Helena Capital Complex and the state's major telecommunications carriers, Qwest and VisionNet. These circuits are carefully monitored and protected by the Office of Cyber Protection (OCP) within ITSD. OCP manages intrusion detection, spam detection and virus scanning systems to protect desktops, servers and applications residing on the network. The network currently has 476 circuits that service over 550 sites.

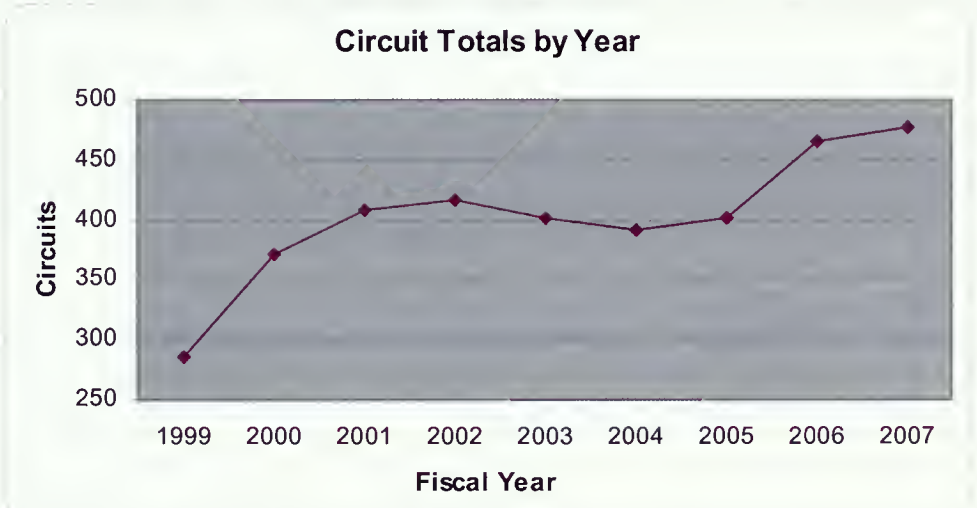

Figure 14 illustrates the growth in the number of circuits and sites serviced by the network.

The majority of remote SummitNet II connections are currently T-1 (1,544,000 bits per second) frame relay. The state has been working with Qwest and VisionNet to obtain higher speed connections. As a result of these efforts, Qwest expanded frame relay services to Lewistown, Shelby, Cut Bank and Conrad. These new services have allowed ITSD to upgrade remote connections from 56Kbps to 1.544Mbps (1,544,000 bits per second) while lowering costs at the same time.

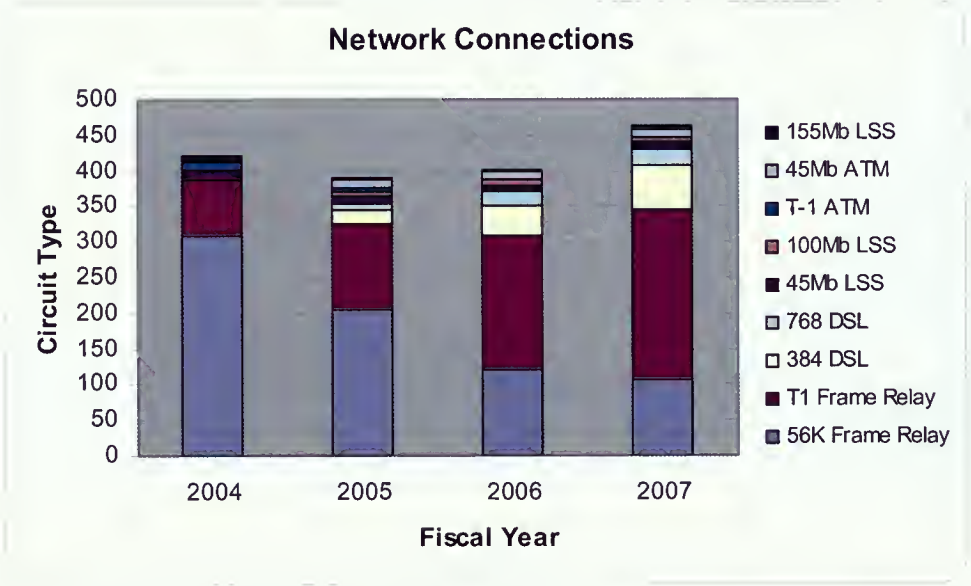

Figure 15 illustrates the increase in network connection speed over time.

Voice

On the voice side of the network, 37 Private Branch eXchanges (PBX) and 246 smaller key systems connect to SummitNet II to provide traditional voice services for the state Voice PBX and key systems. PBX servers have a much longer life than data servers. Some are used for more than 20 years. Individual components and software are upgraded within the same chassis. Features and functionality of newer systems including Voice Over Internet Protocol (VOIP) are becoming mature while costs are dropping. VOIP allows the transfer of voice traffic over lines that are typically used for data traffic. The Internet is currently carrying voice traffic through VOIP. Proper planning based on accepted standards should ensure the state's continued success in its use of its telecommunications infrastructure to reach across Montana.

Internet Access

Up until January of 2002, the state's Internet utilization grew at a modest but steady rate. By July of 2003 the growth started to accelerate, more than doubling by 2006. This growth mirrors the growth in Montana's e-Government services as well as a greater dependence on the Internet as a means of conducting research, communicating, and an increase in the amount of electronic data being sent to citizens, federal agencies, and private companies. Use of the Internet as a key strategic communications vehicle will continue to fuel its rapid growth. This trend is not expected to change in the foreseeable future. Because the Internet is becoming such an integral part of everyday business in every state agency, a second Internet access point in Billings was added as a backup in case the primary link fails. Current utilization of the network is between 60 and 70 percent.

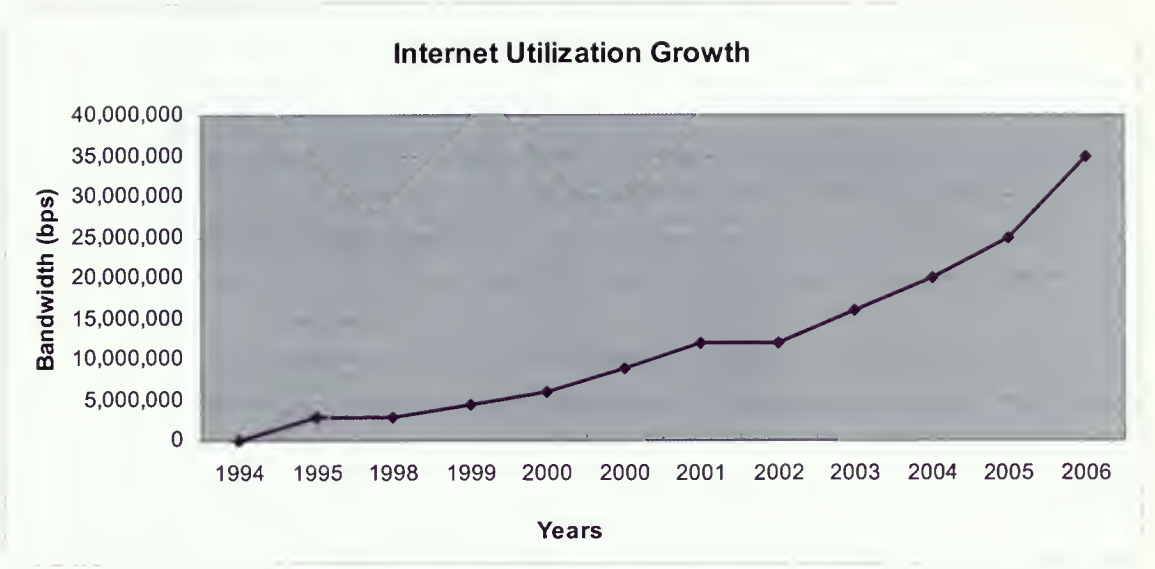

Figure 16 illustrates the Growth in Internet Utilization

Interactive Video

The Montana Educational Telecommunications Network (METNET) is an H.320 and H.323 (a national transmission standard for video data) compliant subscription service that supports both state agencies and the university system's delivery of two-way interactive distance learning classes, hearings, and meetings. The system uses the SummitNet II infrastructure to connect 16 conference facilities in 13 cities across Montana.

There is an increasing emphasis on the use of network and computing services to support the administrative and business needs of the state, IT employees, citizens, and businesses. There is an increased demand of video, audio, and high definition graphics. The state needs to invest in infrastructure and support services if it is to meet the changing expectations of those accessing government services and information.

Investments in transport services, management tools, supporting infrastructure, and people have been frozen for more than six years. We will need to make the one-time investments to update the current IT support structure and increase on-going operational budgets in order to meet the increasing demand being placed on the network.

One solution to this problem is to utilize a high speed optical network across the state with circuits capable of delivering data at 20 GPS. The "Northern Tier Initiative" utilizes existing infrastructure in a cooperative effort with the education and research community. The relatively low cost of using the existing Northern Tier backbone will allow for a larger amount to be spent on local connectivity.

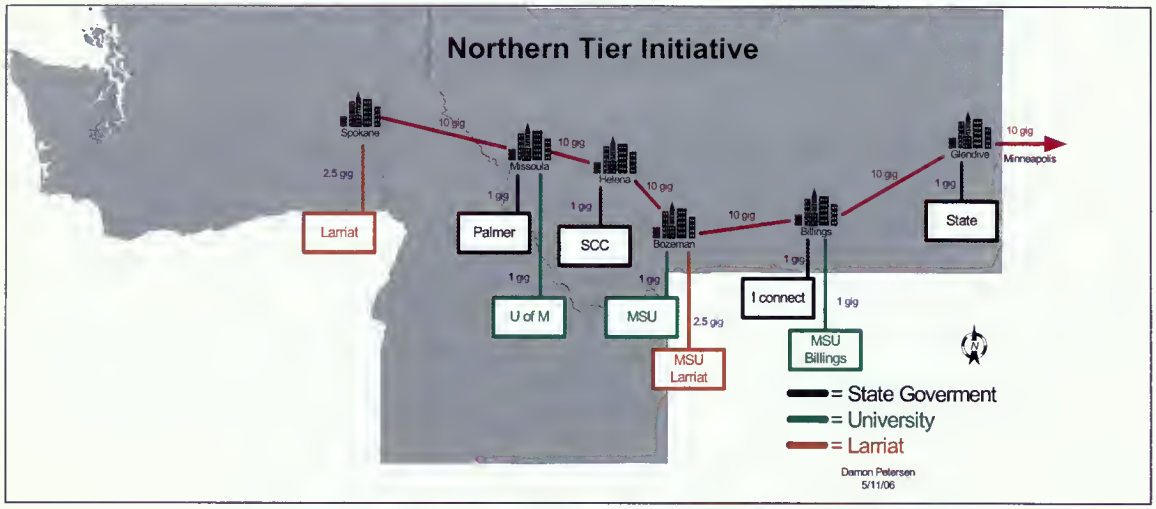

Figure 17 illustrates Montana's part in the Northern Tier Initiative

ITSD Data Storage Environment

Data storage demand has grown dramatically in recent years. ITSD and agencies are using Storage Area Network (SAN) technology to ease the administrative burden, share files across multiple servers, and provide advanced storage features. Recent improvements in the Capitol complex network make it possible to centralize agency storage in ITSD to realize increased economies of scale.

IT Staffing

The Legislative, Judicial, and Executive branches currently employ approximately 830 staff to support their IT systems. The University System is not included in this total. Overall, the state has 6.5 percent of all employees specializing in supporting the IT infrastructure. Gartner's 2005 survey found the percentage of state IT employees is usually 7 percent to 8 percent of the total employee population.

Montana is significantly lower because Montana continues to rely heavily on outside contractors. The equivalent of 221 IT FTEs is being employed by agencies through contracting. Although contractors comprise 22.2 percent of all IT staffing, they consume 50 percent of the funds spent on IT staffing. In fiscal year 2006 the state spent more than $34.6 million on private IT contractors, 25.2 percent of the total IT expenditures for the state. Other states average only 6.7 percent on outside contractors.

Recruitment of IT professionals with the necessary IT skill is the largest staffing problem identified by agencies. Anecdotal evidence of small candidate pools, large percentages of unqualified candidates, and repetitive hiring efforts are common across many agencies. Several agencies have been unable to hire IT project managers with sufficient skills to manage their largest IT projects. Many IT managers attribute existing salary limits as a significant aspect of their hiring problem.

IT Expenditures

Based on data from the Statewide Accounting, Budgeting and Human Resource System (SABHRS) Montana's total IT expenditure for fiscal year 2006 was $121,720,749, a growth of 5.1 percent annually since fiscal 2004. Montana IT expenditures are following a predictable historical trend and remain a fairly constant 2.8 percent of state operating expenses. Montana's total IT expenditure of 7.3 percent of all operating expenditures is in line with other states, according to Gartner. Gartner's surveys show that states spend between 6-7 percent of their total operating budgets on IT. The following chart illustrates the agencies with the highest IT expenditures.

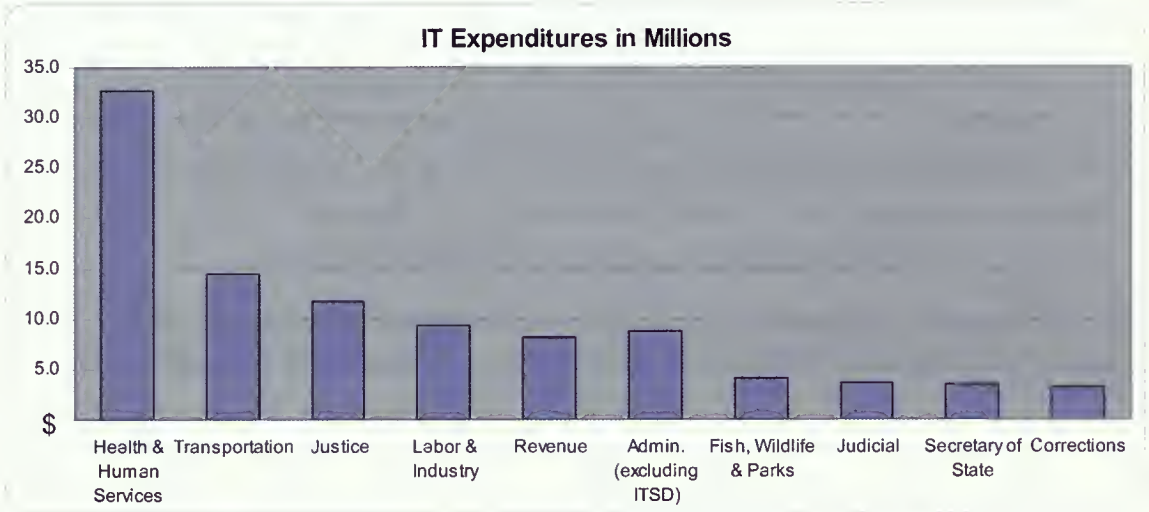

Figure 18 illustrates the top ten agencies with the highest IT expenditures (A complete list of IT expenditures by agency can be found at appendix D.)

Figure 19, below, is a breakdown of IT expenditures by categories. The graph also compares Montana's expenditures to the average of other states from Gartner's 2005 survey. Montana varies significantly from other states in two areas:

- Montana has a very large dependency on contracted services. As a percent of total IT expenditures, Montana spends almost 4 times as much on contractors as do other states.
- Montana's expenditures on packaged software (12.8%) are far less than what other states spend (20.3%). Montana appears to be relying on custom built software instead of purchasing standard packages.

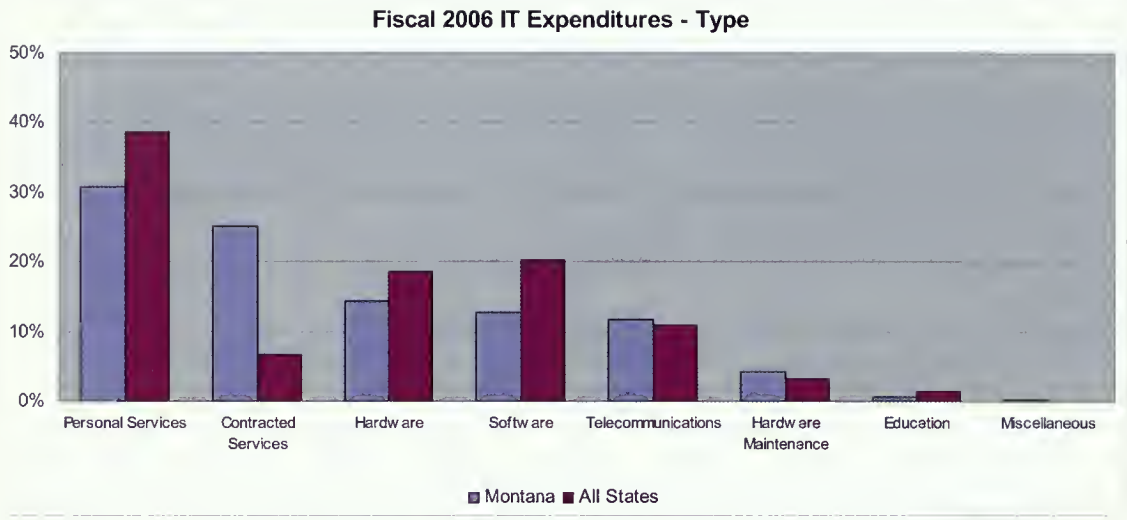

Figure 19 illustrates IT expenditures by type compared to other states.

Major Information Technology Projects

Major IT projects for Montana are primarily defined as projects requiring a minimum of $300,000 in funding over the upcoming biennium. The funding can come from a variety of sources, including state funds, federal funds, and user fees.

Montana is entering a new era, with projects defined by greatly increased IT expenditures brought on by the need to replace many aging mainframe systems. Among the major systems, four are from Health and Human Services, with one each from Justice and Revenue.

- Child & Adult Protective Services (CAPS) $33.5M
- Welfare (TANF) $16.2M
- Medicaid Management System (MMIS) $70.0M
- Foods Stamps $13.1M
- Free Electronic Filing of Income Tax $6.8M
- Motor Vehicle & Driver Licensing (MERLIN) $15.9M (currently in progress)

In addition to agency application development efforts, DOA/ITSD is proposing two major IT infrastructure projects.

The first major infrastructure proposal calls for the construction of new facilities in Helena and in an undetermined Eastern Montana location to house the enterprise services provided by ITSD. The estimated investment needed for these new centers is $25 million. The Helena facility would house the enterprise data center, a network operations center, and a voice telecommunications operations center. The facility has 15,000 square feet of raised floor, and would house approximately 100 ITSD Operations staff plus an estimated 30-50 technical staff from other agencies. If feasible, space for the 60 other non-operational ITSD staff would also be made available. The remote facility will house an enterprise data center, a backup network operations center, and a backup voice telecommunications operations center and be located somewhere in eastern Montana. Initial size of the remote facility is estimated to be 5,000 square feet.

The second is a major network upgrade that would use the old Touch America fiber network and is known as the Northern Tier Project. At a projected cost of $6.7 million, it would power up the dark (dormant) fiber along highway I-90 to replace or enhance our current backbone network that is approaching its capacity. This is a significant upgrade that would result in a 200 fold increase in network capacity and would enable numerous new uses of technology and solve current "bandwidth" problems.

The governor's budget also includes $7 million as the state's 50 percent matching share the development of a supercomputer site at Montana Tech. IBM has offered the opportunity to install a supercomputer in Butte for research and higher education.

A complete summary of all major IT projects can be found in appendix G The Office of Budget and Program Planning (OBPP) assembled a list of projects that would be funded through the Executive Planning Process and are included in the governor's budget proposal. Some projects are funded outside of the EPP process. These projects were identified during the spring of 2006 as part of the IT planning cycle. Projects on both lists will be reviewed and funded through the 2007 legislative session.

Appendix F contains a summary of all the major IT projects for fiscal 2005 and 2006. For the past three years agencies and ITSD have been focusing on improving their project management practices and the efforts have paid dividends. During this period, no IT projects were terminated or failed to deliver the required system.

Other IT Issues

The Evolving Role of State Chief Information Officers

Among states throughout the country, the tension between centralization and decentralization persists, with the trend toward centralization becoming more widespread. Because of cost pressures, centralizing the management of government IT assets and functions is popular but not always appropriate. Ultimately, the CIO's role and duties should align with the expectations of senior government officials. It is important for the CIO to provide the kind of leadership for the state that is in line with the particular stage of the state's evolutionary process. An Enterprise CIO and centralized IT management both require an explicit mandate from political leaders of the state.

Open Source Software in Government

Open Source (OS) is an alternative to the proprietary approach to software development and licensing. The Open Source method of developing and distributing software makes application source code available to all interested parties at no cost. OS operating systems and web server products have been very successful throughout the IT industry.

By contrast, proprietary software vendors, such as Microsoft, do not release their source code. They perceive that doing so will endanger their intellectual property and the potential revenue stream it produces. They also believe it would endanger the quality of the product.

In 2003 the state of Montana established Linux, an open-source software product, as a standard product to be used for database and web server implementations. ITSD presently has about 75 servers running these products, and many agencies do as well. The use of office productivity open-source software has not yet had the same success as OS operating systems and web server applications. ITSD recommends that a study be conducted to explore the use of open-source productivity applications and recommend its role in the state enterprise.

Records Management

As the state's executive, legislative, and judicial offices perform their missions, they produce official records and information representing important business assets supporting government operations. Each agency is responsible for managing the records it creates and receives. State agencies currently use disparate media, formats, and processes to manage their records. This practice has the potential for exposing agencies to considerable risks to their operational and mission-related responsibilities. To mitigate these risks, agency decision-makers need guidance in the form of defined Records and Information Management (RIM) policies, standards, and procedures that are applied consistently across the state government enterprise.

To begin a direction for state government, the Secretary of State's office intends to formulate an Electronic Records and Information Management (eRIM) Task Force that will help outline needs, priorities, funding, and risks. The intent is that this group will give direction for agencies that will promote and enable enterprise-wide compliance, continuity of government, content and document management, and digital preservation. The goal is to bring process improvement and business efficiencies to agencies and employees by way of standardization, workflow, retention application, education and training.

The Secretary of State's Office proposes to work closely with the Department of Administration Information Technology Services Division (ITSD) for the purpose of associating electronic records and information management (eRIM) requirements with information technology (IT) capabilities. The objective will be to enhance compliance across the enterprise with state and federal requirements.

Real ID

Enacted in May of 2005, the Real ID Act requires states to adopt certain standards, procedures and requirements for issuing drivers licenses and identification cards if they are to be accepted as identity documents by the federal government. In essence, the Act establishes a national identity card. After May 11, 2008, a federal agency may only accept, for official purposes, state licenses or identification cards that meet requirements specified in the Act.

The Department of Homeland Security has said that states, not the federal government, must bear implementation costs for Real ID. The American Association of Motor Vehicles Administrators has estimated that it will cost Montana a one-time amount of approximately $5.8 million for implementation of Real ID. On-going annual costs for Montana are estimated to be $2.9 million. These estimates include both IT and non-IT costs. Additionally, if Montana adheres to the DHS identification card specifications, there will be an additional one-time cost of $2.9 million and on-going costs of $2.1 million annually.

There could be some push-back from some states regarding implementation of Real ID standards, with some states choosing not to implement Real ID. Whether or not Montana chooses to implement federal requirements for Real ID will be a policy decision made by the state legislature. Montana already meets many of the Real ID standards, so it will be less difficult for Montana to comply than it will be for some other states.

Security - National and Local Issues

Information is one of the most valuable assets a company or government may possess. While 'information' covers a broad spectrum, there is an ever increasing focus on maintaining the security of what is considered sensitive data, including:

- social security numbers
- personal health information
- credit and debit card numbers and pins
- passwords

Businesses and governments would not be able to conduct meaningful operations without access to the information required to support defined business functions.

Unauthorized access to, or inappropriate use of, sensitive information is on the rise nationally. A great deal of planning and resource expenditures is required in order to protect the state's systems. The Office of Cyber Protection (OCP) estimates that there are nearly 2 million attempts daily to access the state's information systems defensive wall. The majorities of these are automated attempts and are reasonably easy to thwart, but many are carefully designed and require much more sophisticated methods of protection.

It is far easier to maintain the trust and confidence of those to whom the information is directly linked, as well as the public in general, by proactively preventing security breaches than it is to regain that trust after a 'security incident' occurs. Repairing the damage is both costly and difficult to achieve.

Data security legislation only exists at the state government level, with 34 states having passed such laws. However, their main intent has been to mandate consumer notification of a breach and not the issue of prevention. While this subject is being debated at a national level, with seven bills under consideration by Congress, progress has been slow.

It is incumbent upon those responsible for maintaining state information security to remain ever vigilant while continuing to craft and adhere to the necessary policies and procedures which will insure the highest level of confidence possible.

Security Policies

The state has been entrusted with the stewardship of a large amount of sensitive information. This responsibility requires adherence to adequate safeguards to insure its security. Achieving and maintaining the highest level of security is only possible when everyone who has access to the systems, data, and networks understands these issues and knows what is expected of them. If users are not sure of what is expected of them, there is a high likelihood of them making poor decisions. Those decisions may include downloading and installing unapproved software, sharing sensitive information via e-mail, visiting malicious or inappropriate websites, and other activities that puts our information at risk.

The most effective and appropriate means of keeping employees informed is through the use of readily accessible, well thought out and documented guidelines, standards, and policies. The intent of any policy must be crystal clear and should be adequately reflected throughout a broad base of like-minded policies.

The state has made recent progress in this area with the creation of an interim policy on Security of Sensitive Data.

Policies presently under development include:

- Acceptable Use
- Physical Security
- User Rights Standards
- Internet Filtering
- Collaboration Tools
- Streaming Media Content Creation.

New administrative guidelines for the development of policy to establish and implement statewide Information Technology policies and standards have also been recently established.

Development of policies addressing the protection of the state's information assets is continuing. To be effective, these policies must contain adequate and reasonable auditing capabilities along with meaningful enforcement and penalty provisions. Unwavering support from the highest levels within the state will be necessary to insure future success.

Protection of sensitive data entrusted to the state has been and must continue to be of paramount importance. While it is the state's responsibility to craft and maintain the necessary policies, it remains incumbent upon the individual to read, understand, and follow them.

Geographic Information Technology Enterprise Infrastructure

The use of Geographic Information Technology (GIT), whether Geographic Information Systems (GIS), Global Positioning Systems (GPS), Remote Sensing or other specialized areas is rapidly expanding throughout the state. This expansion is seen in both traditional areas like natural resources and emergency response, and in new areas like economic development and health care.

GIT, whether delivered via the Internet or more traditional map products, provides a very visual approach to supplying the geographic component that is inherent in almost every state business process or important state issue. Because of a rapidly changing GIT environment, the Montana Spatial Data Infrastructure (MSDI), the Montana Land Information Act (MLIA), the Montana Land Information Advisory Council (MLIAC) and GIS Coordination at ITSD, need to be fused together through a Common Operating Picture (COP) to better serve Montana's needs.

Explosive growth in GIT and the need to integrate with federally mandated enterprise architecture will require the State to adapt and employ new technologies such as web services, federated approaches to the collection, maintenance and distribution of data, and service oriented architectures.

The Montana Spatial Data Infrastructure (MSDI) serves as the foundation for base geospatial data in Montana. A reliable infrastructure theme, stewardship and leadership, along with long-term funding for collection, maintenance, integration, enhancement, and dissemination are needed. To assist in the infrastructure development, the Montana Land Information Act (MLIA) is proceeding under Administrative Rule established in September 2006. A 2007/2008 Land Information Plan has first round grants to be awarded in May, 2007. MLIA funds will not ultimately meet all the needs of the Spatial Data Infrastructure and a federated enterprise GIT community, so other funding sources must be identified. The Montana Land Information Advisory Council must remain engaged in the Montana Land Information Act and infrastructure processes, while actively adapting current policy and vision to a changing environment.

A federated enterprise GIT community demands clearly defined roles and responsibilities that may differ from current roles assumed over the years. Adopting the recommendations from Montana's Chief Information Officer's Committee on a GIS Common Operating Picture, and the hiring of a State Geographic Information Officer (GIO) will help clarify those roles and responsibilities leading to effective and efficient GIT development now and in the future.

Appendices

Analysis of IT Infrastructure ..... A

Agency IT Staffing ..... B

Agency IT Expenditures for Fiscal 2006 (chart) C

IT Expenditures as a Percent of State Operating Expenditures ..... D

IT Recommendations and 2009 Biennial Budget Requests ..... E

Major IT Projects for Fiscal 2005-06 ..... F

Major IT Projects for Fiscal 2008-09 ..... G

ESSC Proposal ..... H

The appendices have not been printed as part of this report. They can be found on ITSD's web site at http://itsd.mt.gov/techmt/biennialreport.asp. If you wish a printed copy of an appendix, please contact:

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